South Jordan City

Culinary Water Rate Study
Secondary Water Rate Structure Analysis

Final Report
Adopted December 5, 2006

Prepared by
Shaun Pigott Associates
Donovan Enterprises

South Jordan City, Utah
Culinary Water Rate Study & Secondary Water Rate Structure Analysis
2006 Update

Table of Contents

Table of Tables

Table of Figures

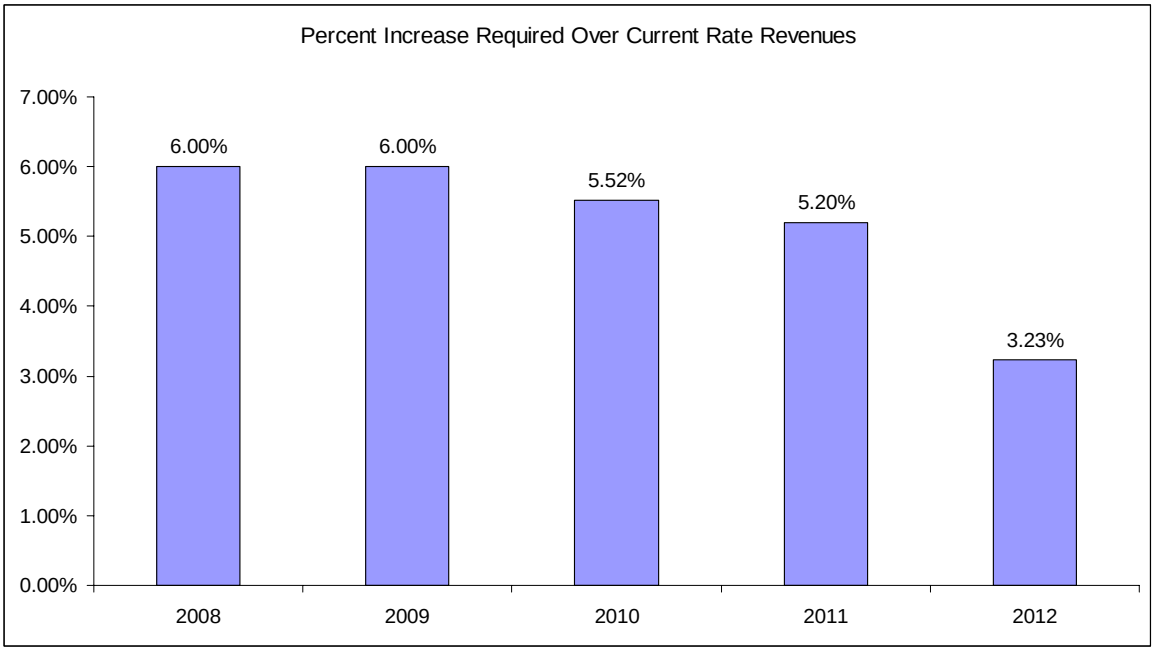
Executive Summary

South Jordan City is updating its culinary water system master plan and developing a funding strategy for the resulting capital improvements. This study addresses the levels and structure of rates needed to support these future infrastructure investments along with the operations and maintenance of the culinary water utility in South Jordan City. A twenty year planning model was developed for this engagement, however, the focus for the rate study is for years covering the period fiscal 2007 through fiscal 2012. A more focused analysis of the City's secondary water rate structure was also prepared as part of this project.

Recommendations for Culinary Water and Secondary Water

- The consultant team did not identify a need for an additional culinary water rate adjustment for this fiscal year (2006-2007). However, due to the combination of anticipated future increases in operations and maintenance costs, principally associated with purchased water costs from the Jordan Valley Water Conservation District (JVWCD); in concert with the implementation of the Master Plan Capital Improvement Plan, it is anticipated that the City will have to adjust culinary water rates in each of the next five years as shown in Figure 1.

Figure 1 - Forecasted Future Increases in Culinary System Revenue Requirements



- The City currently charges a culinary water impact fee of $2,651 per Equivalent Residential Unit (ERU). The impact fee update study that was conducted as part of this engagement concludes that this fee can be defensibly increased to $3,194 per ERU. It is recommended that the City adopt the newly calculated fee. The use of impact fee revenues and the growth represented by these revenues is pivotal to this rate analysis, as impact fee receipts can be used to both buy down capital requirements that would have been recovered through rates and assist with payment of debt service. If growth does not meet the projections cited in this

analysis and the City commits to the projects contained in the Capital Improvement Program, then water rates would have to be increased to meet the utility's revenue requirements.

- When the City actually decides to go to the bond market to fund construction, the structure of future indenture(s) can be crafted to accommodate an early debt retirement, or "call" feature. By doing this, the City can retain the option for paying off future bonds with surplus cash if it is generated, rather than carrying extraordinary fund balances.

- The Water Capital Projects fund is dedicated for construction activity, and therefore, does not fall under the City's "18%" planning rule for operating funds. We recommend that it is prudent to establish and maintain a contingency reserve to meet unexpected emergency outlays in this fund. We suggest that the City consider establishing such a reserve policy. This reserve should represent a reasonable percentage of the original cost of total fixed assets, but should be no less than the cost to replace or repair a critical element of system equipment. We suggest that an appropriate contingency reserve level would be: 1% of culinary system fixed assets (expressed as book value; i.e., original cost less accumulated depreciation).

- The City requested that the consultant team review the current rate structure for its efficacy in promoting conservation. We have completed our analysis of the City's current rate structure, and we are not recommending that the City change from its current inverted block rate structure at this time. The blocks are consistent with establishing reasonable conservation incentives while maintaining the utility's revenue stream. However, as the new capital improvement program unfolds, and better SCADA data is obtained from meters at the JVWCD delivery points, revisiting of this rate structure is recommended.

- The City's current **secondary** water system rate structure applies a uniform monthly rate (throughout the year) of $18.54 per ERU. Based on estimated pump expense for the upcoming year, the total electrical cost and operations/maintenance expense for the secondary water pumps will be $7,816. The customers served by this pressure system include 132 residential connections or ERUs and 3 irrigated privately owned ball fields to which the City has assigned a secondary water value of 27 ERUs. Allocating the pumping costs over these 159 ERUs results in a cost of $4.10 per ERU per month to be applied to these pumped system customers in addition to the overall secondary water base rate.

- Corresponding adjustments to the secondary water system's remaining overall budget results in a revenue requirement of $645,688. Based on this cost and a total customer base of 3,120 ERUs, the overall secondary water rate would be $17.25.

Analysis of Revenue Requirements

This analytical task determines the amount of revenue needed from rates. This is driven by utility cash flow or income requirements, constraints of bond covenants, and specific fiscal policies related to the culinary water utility. Based on two years of actual financial records (i.e., fiscal 2004 and 2005), and two years of estimated financial performance (i.e., fiscal 2006 and 2007), a base case analysis was developed. This case is predicated on the following planning assumptions:

- For the current budget year (fiscal 2007), it is forecast that the culinary water utility will generate sufficient revenues from rates, charges and impact fees to meet its obligations and produce an unappropriated ending fund balance in the Culinary Water Fund (the operating fund) of $1,707,417. It is estimated the beginning balance for the operating fund in this fiscal year was $1,406,182. The consultant team is not recommending any culinary water rate adjustments for this fiscal year.

- For the forecast of revenue requirements, the following assumptions were made based on discussion with city staff and the city's consulting engineers, Hansen Allen & Luce, Inc.:

  - Inflation in costs and growth in the customer base – In order to achieve maximum forecasting flexibility, the revenue requirements model was programmed to allow for inflation and cost escalation factors by budget line item. Per guidance from city staff, the following differential inflation factors were applied for operating cost line items:

    - All direct labor line items – 4.0% per year
    - Health insurance premiums (City cost) – 12.5% per year
    - Water purchases from JVWCD – 6.0% per year
    - All other operating expense line items – 3.0% per year

    The growth forecast expressed in Equivalent Residential Units (ERUs) is taken from the July 2006 Capital Improvements Plan (CIP). Based on this ERU forecast, the consultant team has applied an impact fee of $3,194 per ERU starting in fiscal 2007. This unit impact fee is indexed for inflation over the forecast horizon. It should be noted that impact fee revenues play a critical roll in the CIP funding plan.

  - Capital Improvement Plan Funding - As stated above, the City is updating its master plan for the culinary water system. The starting point for the funding strategy for that plan comes from the City's July 2006 CIP. An on-going concern regarding the funding for this CIP has been identifying the capital costs already incurred by the City and funded from the proceeds of the City's 2003 water system revenue bond. Based on input received from the City that identified current vs. future funding for the projects in the CIP, the future amount to be funded by the City has been reduced by $13.4 million to account for projects that have been fully or partially paid from the 2003 revenue bond proceeds. Also based on city staff input, we have added certain costs to the July, 2006 CIP that were not previously included. Firstly, we have added $2.0 million to account for the culinary water utility's estimated pro rata share of the new municipal services building and yard improvements. These facilities are projected to be constructed in fiscal

2008. Secondly, we have added $408,000 to the CIP for Supervisory Control and Data Acquisition (SCADA) projects related to the CIP's called out in the culinary water master plan. These costs are distributed over four projects and several forecast years. Finally, we have added $388,869 to pay for whole street overlays that will be charged to the culinary water utility as a result of street cuts made for three water pipeline projects. With these additions, the net future CIP funding requirement amounts to $35.4 million (in 2006 dollars). In all forecast years, every attempt is made to use surplus cash to fund capital improvements. However, since the CIP is so heavily weighted in the first years, it was necessary to model the use of new revenue bond proceeds to fill the funding gap. Assuming that the CIP is funded based on the implementation schedule laid out in the July, 2006 Plan, by the end of fiscal 2010, the Culinary Water Fund will be generating surpluses. When the City actually decides to go to the bond market, the structure of future indentures can be crafted to accommodate an early debt retirement, or "call" feature. By doing this, the City can retain the option for paying off future bonds with surplus cash if it is generated, rather than carrying extraordinary fund balances.

- Operating Costs in Excess of Inflation – There are three classes of operating costs that are programmed to grow over time in excess of inflation. Theses classes are:

  - Purchased water costs – The contract with JVWCD specifies that that the total cost of purchased water consists of fixed unit cost increases, and a metered or flow based cost element based upon metered demand. With the forecasted growth in the customer base, the City's consulting engineers have estimated that the total future cost of purchased water will grow in excess of inflation. For modeling purposes, the city's engineers have accounted for future water demand/costs and for unit price escalation at 6.0% per year.
  - Administrative charges - Based on guidance from city staff, the administrative charges that the water utility pays to the City's general fund for services will increase in excess of inflation for three consecutive years starting in fiscal 2008. Based on this guidance, water administrative charges are programmed to increase by $139,400 per year over this time frame. These costs are in addition to the existing administrative fees and inflationary adjustments included in the study. For this fiscal year (2007), total administrative charges paid to the general fund are budgeted to be $560,124. By fiscal 2010, these charges are forecasted to be $1,042,935. After fiscal 2010, these costs grow with inflation.
  - Staffing Costs – The water utility's staffing plan calls for the addition of twelve full time equivalent (FTE) positions at various times over twenty years. These positions and the associated payroll and benefits costs have been accounted for in the revenue requirements model. Table 1 shows the proposed staffing additions, and other associated information:

Table 1 - Water Division Long Range Staffing Plan

YEAR	POSITION	STATUS	GRADE	HOURLY	EQUIPMENT	PURPOSE
2008	Maint. Worker	Full-time	8	14.21	1-One-ton Crew Cab, Utility bed, Uniform Allowance, 1-Radio	Water Construc., And Repair
2009	Backflow Tech II	Full-time	8	14.21	1- Mini Pick-up, Uniform Allowance, Cell Phone	Comm. Backflow Inspections
2010	2-Maint. Workers	Full-time	8	14.21	1- 10 Wheel Dump, plow, salter, 2-Uniform Allowance, 2-radios	Culinary System Maint.
2011	Lead Worker	Full-time	14	18.90	1-One Ton Truck, Uniform Allowance, 1-Radio, 1- Cell Phone, 1-Computer	Culinary System Maint.
2012	Maint. Worker	Full-time	8	14.21	Uniform Allowance	Culinary System Maint.
2017	2- Maint. Workers	Full-time	8	14.21	1- One ton truck, Utility Bed, 2- Uniform Allowances, 2-Radios	Culinary System Maint.
2022	2- Maint Workers	Full-time	8	14.21	1- One ton Truck, 2- Uniform Allowances, 2- Radios	Culinary Water System Maint.
2027	2- Maint Workers	Full-time	8	14.21	1- 10 Wheel Dump, Plow and Salter, 1- One Ton Truck, 2-Uniform allowances, 2- radios	Culinary Water System Maint.

Source: South Jordan City

- Modeling for Contingencies, Reserves, and Ending Fund Balances: The City has a standing reserve planning rule for operating funds such as the Culinary Water Fund. This rule states that for operating funds in any given fiscal year, the budgeted unappropriated ending fund balance should be equal to or less than eighteen percent (18%) of the next fiscal year's forecasted revenues for that fund. Given this planning rule, it is anticipated that when budgeting for the Culinary Water Fund, if city staff determine that the budget year estimated ending fund balance exceeds this 18% threshold, the surplus would be directed (via a budgeted transfer) to the Water Capital Projects Fund. This cash would then be held for future infrastructure investment. The Water Capital Projects fund is dedicated for construction activity, and therefore, does not fall under the City's "18%" planning rule. It is prudent to establish and maintain a contingency reserve to meet unexpected emergency outlays in this fund. This reserve should represent a reasonable percentage of the original cost of total fixed assets, but should be no less than the cost to replace or repair a critical element of system equipment. An appropriate contingency reserve level would be: 1% of culinary system fixed assets (expressed as book value; i.e., original cost less accumulated depreciation).

Revenue Requirements Forecast & Results

All of the above cost elements are contained in the revenue requirements model and from this, the consultant team proceeded to develop a base case forecast. The base case assumed that the utility would fund the updated CIP as currently phased, in addition to the newly added construction projects discussed above (i.e., the Water Department's share of the new municipal services building, and the SCADA projects). Also, the utility would fund the operating costs in excess of inflation (i.e., purchased water, added administrative, and staffing costs). This base case resulted in the following forecast of culinary system revenue requirements (i.e., Table 2). Another key factor in the revenue requirements analysis was the incorporation of an anticipated one-time rate credit from JVWCD due to pressure zone 2 storage costs. This credit has been used to effectively buy down rate requirements from South Jordan customers over the years 2008 – 2010. Also, it is anticipated that adjustments will be made by the City to further reduce the revenue required to fund purchased water costs in order that cash be available to meet the City's

bond covenants. These adjustments and the final rate requirements are contained in the "Analysis Section" of this report in Table 10.

Table 2 – Base Case Forecast of Culinary System Revenue Requirements

South Jordan City
Projection of Water Fund Revenue Requirements

Line Item Description	Actual 2004	Actual 2005	Estimated 2006	Estimated 2007	Near Term Forecast 2008	2009	2010	2011	2012
Projection of Cash Flow:									
Water fees	6,230,780	6,606,578	7,282,673	8,029,147	8,706,670	9,906,902	11,216,369	12,396,559	13,537,021
Finance charges	134,742	124,234	129,000	129,325	133,205	137,201	141,317	145,557	149,924
Investment earnings	-	19,930	87,520	70,000	47,776	39,066	44,556	63,462	94,178
Water share leases	-	6,331	3,217	4,774	4,917	5,065	5,217	5,373	5,534
Water meter sets	-	117,227	206,750	161,989	174,593	187,186	196,546	204,406	212,578
Backflow fees	-	-	-	20,000	21,555	23,109	24,264	25,233	26,241
Miscellaneous revenues	113,170	22,457	34,229	56,619	61,024	65,424	68,695	71,442	74,297
Sale of capital assets	-	6,440	-	-	-	-	-	-	-
Transfer from Water Capital Projects Fund	-	450,000	302,650	296,864	-	-	-	-	-
Subtotal Gross Revenues	6,478,692	7,353,197	8,046,039	8,768,718	9,149,741	10,363,954	11,696,965	12,912,032	14,099,773
less: Operations & maintenance expense	4,283,997	4,762,788	5,157,425	5,433,437	6,510,974	7,341,479	8,002,931	9,251,945	10,249,370
less: Debt service	1,064,473	2,061,506	2,057,569	2,450,934	2,535,578	2,900,458	3,456,855	3,449,851	3,434,110
less: Transfers to other funds	556,426	82,346	474,551	622,346	481,200	482,436	483,709	485,020	486,371
less: Trustee fees	-	3,927	9,500	9,500	9,500	9,500	9,500	9,500	9,500
Net Cash	573,796	442,630	346,994	252,500	(387,511)	(369,919)	(256,030)	(284,285)	(79,578)
Net Deficiency/(Surplus)	(573,796)	(442,630)	(346,994)	(252,500)	387,511	369,919	256,030	284,285	79,578
Test of Coverage Requirement:									
Total Operations & Maintenance Expense	4,283,997	4,762,788	5,157,425	5,433,437	6,510,974	7,341,479	8,002,931	9,251,945	10,249,370
Debt service on senior lien revenue bonds	1,064,473	2,061,506	2,057,569	2,450,934	2,535,578	2,900,458	3,456,855	3,449,851	3,434,110
Additional Coverage Required: 25%	266,118	515,377	514,392	612,734	633,895	725,115	864,214	862,463	858,528
Total Revenue Required with Coverage	5,614,588	7,339,671	7,729,386	8,497,105	9,680,447	10,967,052	12,323,999	13,564,259	14,542,008
Gross Revenues Allowable for Coverage Test:	6,478,692	7,353,197	8,046,039	8,768,718	9,149,741	10,363,954	11,696,965	12,912,032	14,099,773
Coverage Recognized	2.06	1.26	1.40	1.36	1.04	1.04	1.07	1.06	1.12
Coverage Required	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25
Net Deficiency/(Surplus)	(864,104)	(13,526)	(316,653)	(271,612)	530,706	603,098	627,035	652,227	442,235
Projection of Revenue Sufficiency:									
Maximum Deficiency			-	-	530,706	603,098	627,035	652,227	442,235
Percent Increase Required Over Current Rate Revenues			**0.00%**	**0.00%**	**6.00%**	**6.00%**	**5.52%**	**5.20%**	**3.23%**
Culinary water rates reconciliation:									
Revenues recognized from current rates			7,282,673	8,029,147	8,706,670	9,906,902	11,216,369	12,396,559	13,537,021
Add revenues from rate increase			-	-	522,709	594,860	619,233	644,658	437,390
Add revenues from growth in customer base			625,120	677,523	677,523	714,607	560,957	495,804	541,236
Total revenues recognized from rate increase and growth			7,907,793	8,706,670	9,906,902	11,216,369	12,396,559	13,537,021	14,515,648

Conservation Based Rates

The City currently has an inverted block rate structure that is designed to give customers a price incentive to conserve water. Under the City's current system of culinary water rates, separate schedules have been developed for the residential and non-residential customer classes. The adopted fiscal 2007 rate schedule for residential customers is as follows:

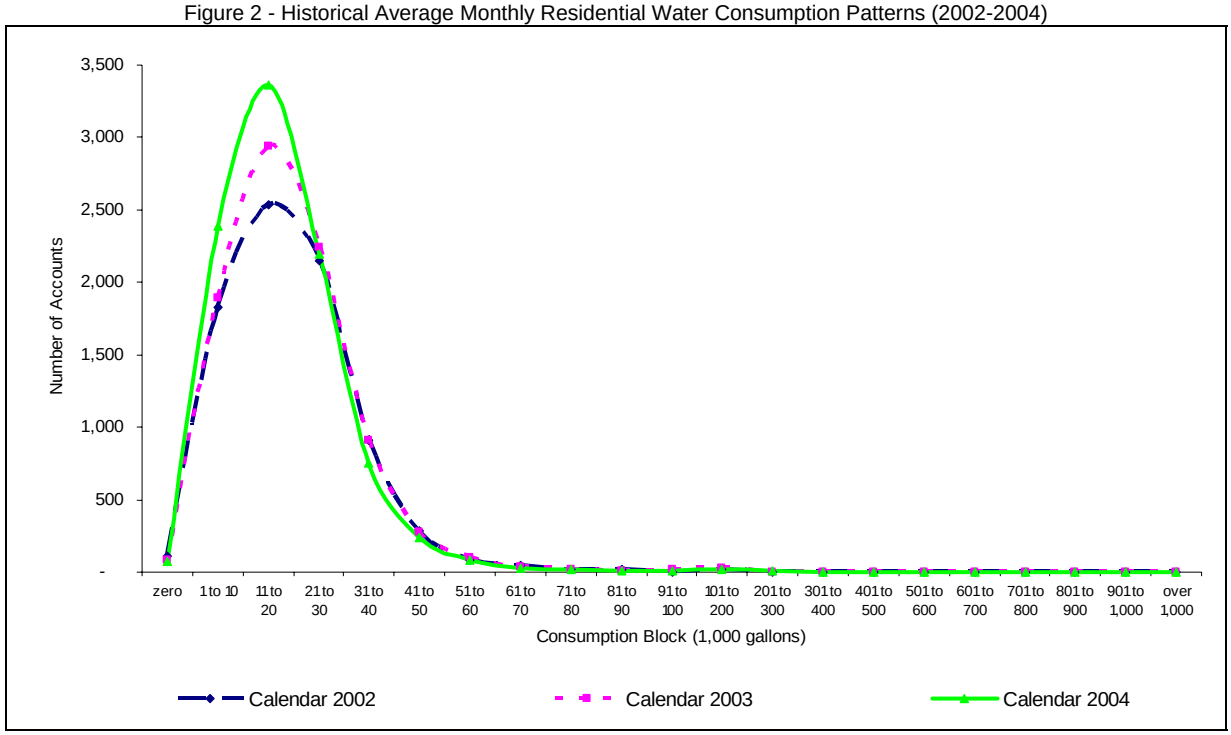
Table 3 - Adopted Fiscal 2007 Residential Rate Schedule

Residential	
Area A	
Monthly Base Rate	29.42
Monthly Usage Rate	
Up to 10,000 gallons (per 1,000 gallons)	1.31
10,001 to 28,000 gallons (per 1,000 gallons)	1.49
28,001 to 48,000 gallons (per 1,000 gallons)	1.65
48,001 gallons and up (per 1,000 gallons)	1.81
Area B	
Monthly Base Rate	29.42
Monthly Usage Rate	
Up to 10,000 gallons (per 1,000 gallons)	1.38
10,001 to 28,000 gallons (per 1,000 gallons)	1.55
28,001 to 48,000 gallons (per 1,000 gallons)	1.73
48,001 gallons and up (per 1,000 gallons)	1.90
Area C	
Monthly Base Rate	29.42
Monthly Usage Rate	
Up to 10,000 gallons (per 1,000 gallons)	1.44
10,001 to 28,000 gallons (per 1,000 gallons)	1.63
28,001 to 48,000 gallons (per 1,000 gallons)	1.80
48,001 gallons and up (per 1,000 gallons)	1.99

As the data in Table 3 shows, the City charges a uniform monthly base fee per customer of $29.42 regardless of geographic location within the City's service area. However, the monthly usage fee (expressed in dollars per 1,000 gallons) varies by service delivery area (i.e., A, B, or C). Within each service delivery area, water is priced in four discrete consumption blocks, with the unit price increasing as the consumption block increases. Generally, inverted block rate structures are the most widely accepted and effective water conservation rate structures. Inverted block rates increase as consumption increases. The advantages are that they can be highly conservation oriented and are generally understandable by customers. With proper educational programs conducted prior to rate changes, they are generally accepted by customers. There are challenges in developing appropriate blocks, cutoffs, and unit rates, and, they may result in revenue instability for the utility. This is particularly important given the fact that the City is embarking on a significant capital improvement program.

The consultant team studied the City's metered water consumption history for the three calendar years 2002-2004. For the residential class, the preponderance of customers had annual average consumption in the first two lower consumption blocks (i.e., zero to 10,000 gallons, and 10,001 to 28,000 gallons. The average monthly consumption for this class was consistently at or very near the 20,000 gallons per month value. Figure 1 shows graphically, the three year average monthly consumption patterns for the residential class.

Figure 2 - Historical Average Monthly Residential Water Consumption Patterns (2002-2004)



South Jordan City, Utah
Analysis of Metered Water Sales Data Expressed in 1,000 gallons per Month
Observed Measures of Central Tendency

	Calendar Year		
	2002	2003	2004
Residential (all non "10" account code prefixes):			
Mean Monthly Consumption	20.42	20.42	19.19
Standard Deviation of the Monthly Mean	17.02	17.06	23.11

Figure 1 is a frequency distribution of average monthly water consumption for the residential class. A frequency distribution is a tabulation of raw data obtained by dividing observed data into classes of unique size and computing the number of data elements falling within each class boundary (in this case, the number of customers observed within each metered water consumption block). From this frequency distribution the team was able to identify patterns of consumption, and measures of central tendency for the residential class. These patterns and tendencies allow the team to make statistically valid judgments concerning the number and size of billing consumption blocks. As the data in Figure 1 shows, water consumption in the residential class is very homogeneous with the preponderance of monthly consumption tightly grouped around the 11-20 thousand gallon per month block. Another interesting observation that can be drawn from the data is that roughly 95% of all residential consumption is accounted for between the zero and 40 thousand gallon per month range.

The consultant team is not recommending that the City deviate from its current rate structure for residential customers. However, as the new capital improvement program unfolds, and better SCADA data is obtained from meters at the JVWCD delivery points, revisiting of this rate structure is recommended

Non-residential water rates are also based on an inverted block structure. The adopted fiscal 2007 non-residential water rate schedule is shown in table 4.

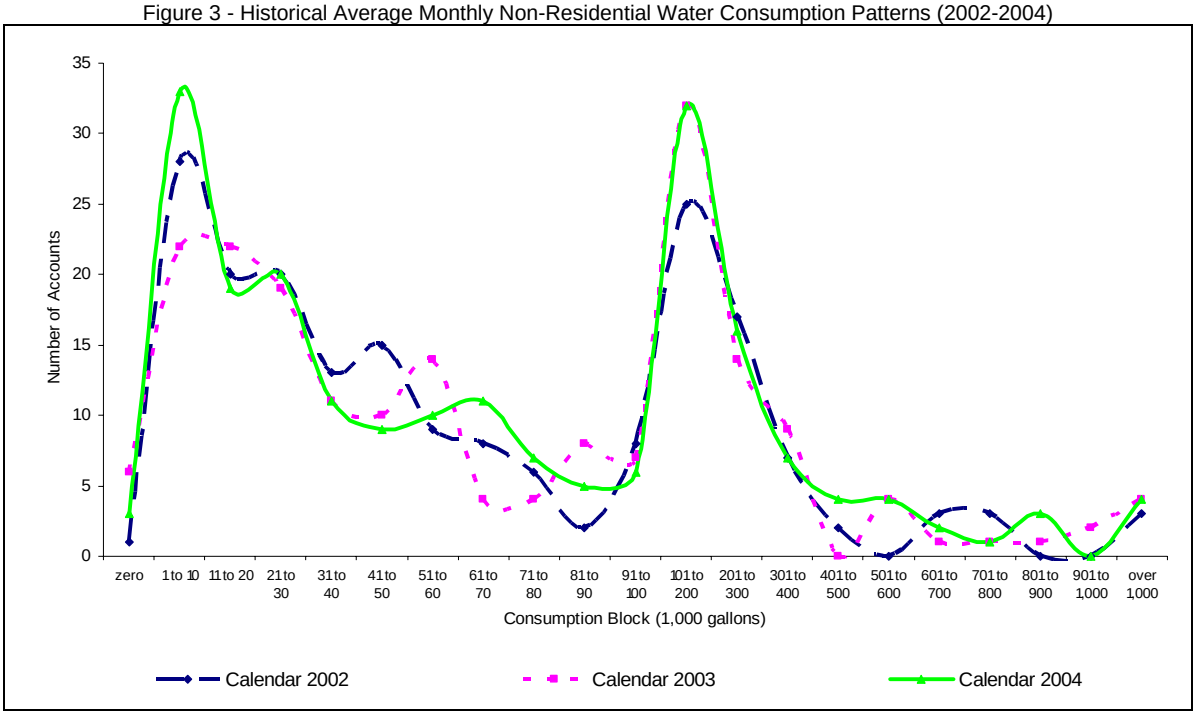
Table 4 - Adopted Fiscal 2007 Non-Residentail Rate Schedule

Commercial	
Area A	
Monthly Base Rate (per month with 8,000 gallons)	62.39
Monthly Overage Rate	
over 8,000 gallons	1.55
over 25,000 gallons	1.68
over 50,000 gallons	1.83
over 75,000 gallons	2.02
over 100,000 gallons	2.24
Area B	
Monthly Base Rate (per month with 8,000 gallons)	62.39
Monthly Overage Rate	
over 8,000 gallons	1.63
over 25,000 gallons	1.77
over 50,000 gallons	1.92
over 75,000 gallons	2.12
over 100,000 gallons	2.35
Area C	
Monthly Base Rate (per month with 8,000 gallons)	62.39
Monthly Overage Rate	
over 8,000 gallons	1.69
over 25,000 gallons	1.85
over 50,000 gallons	2.01
over 75,000 gallons	2.21
over 100,000 gallons	2.45

As the data in Table 4 shows, the City charges a uniform monthly base fee per non-residential customer of $62.39 regardless of geographic location within the City's service area. However, water is priced in five discrete consumption blocks (versus four for the residential class), with the unit price increasing more steeply as the consumption block increases. This is a change from the residential inverted block structure. The theory here is that with more pricing blocks, the price sensitive commercial and industrial customers are given a stronger price signal to conserve.

The non-residential customer class consists of businesses, industries, and institutions that purchase water from the City. The consumption patterns of this class are expected to vary significantly from the monolithic pattern that was observed for the residential class. For example, a large commercial nursery located in the City that purchases culinary water for irrigation, would clearly use more water, more often, than the standard single family residential customer. This class of customers with the account code prefix "10" was also analyzed by the team from the City download data. The same frequency distribution tool that was used to analyze the residential consumption data was used for analyzing trends and measures of central tendency for the non-residential class. Figure 2 shows the results of the analysis.

Figure 3 - Historical Average Monthly Non-Residential Water Consumption Patterns (2002-2004)



South Jordan City, Utah
Analysis of Metered Water Sales Data Expressed in 1,000 gallons per Month
Observed Measures of Central Tendency

	Calendar Year		
	2002	2003	2004
Non-residential:			
Mean Monthly Consumption	128.24	137.06	146.81
Standard Deviation of the Monthly Mean	216.26	224.38	278.53

In the case of non-residential water consumption, the frequency distribution can be characterized as bi-modal, in that the observed data consistently generates two distinct peaks in the frequency distribution. As the data show, this class actually consists of two types of consumers. The first group can be characterized as low consumption customers. This group congregated around the low end of the consumption block scale. Examples of these types of customers could be professional offices, small retail shops, and small businesses without the need for irrigation.

The second type of customer in this class is the larger consumption group. This group consumed water at the higher end of the scale, with the preponderance of them grouped at the 101-200 k-gallon per month block. These types of customers usually have both domestic and irrigation uses for the culinary water that is delivered to them. Examples of this group could be big box retailers, strip mall owners, large restaurants, and associated customers with large land use foot prints. The bi-modal consumption pattern of the commercial class could argue that targeted pricing blocks would be appropriate. The reason being that the cost to deliver water to the high consumption customers (particularly for peaking), would justify higher pricing for the outer consumption blocks.

Here too, the consultant team is not recommending that the City deviate from its current rate structure for non-residential customers. However, as the new capital improvement program unfolds, and better SCADA data is obtained from meters at the JVWCD delivery points, revisiting of this rate structure is recommended

Secondary Water Rate Structure Analysis

Background

South Jordan City has determined through previous studies that pursuing a city-wide pressurized secondary water system is currently not economically feasible. However, the City will continue to support the existing secondary water system while encouraging the introduction of new extensions to this system where they are feasible. The City has asked that the consultant team review the rate structure currently in place for those neighborhoods and customers that have secondary water. In December 2005 the City's "Position Regarding Future Use of Secondary Water" had a recommendation that the secondary water rate structure include several components: a base fee and a use fee. Currently, connections (or equivalent residential units – ERU) to the City's secondary system are not metered and are charged a uniform rate of $18.54 per month per customer. The City has requested a review of this methodology and a recommendation as to how the equity of the secondary water rate structure might be improved.

Allocation of Costs to Customers

The total number of ERUs connected to the City's secondary water system is 2,961 (as of 8/31/06). As stated above, the City's current structure applies a uniform monthly rate (throughout the year) of $18.54. Under the current rate methodology, the total revenue requirements for the secondary water system are allocated over this customer base. In response to the City's "Position Statement" regarding development of a "use" component to the rate, City staff were able to isolate the additional costs for electricity and pump-specific operations/maintenance. These costs were attributable to only those customers whose secondary water is delivered and pressurized by the City. These pumped system costs are estimated to be $7,816 for this budget year. In evaluating the current number of pressurized/pumped system connections, the City identified a total of 132 residential connections or ERUs and 3 irrigated privately owned ball fields to which the City has assigned a secondary water value of 27 ERUs. This ball field value was based on an irrigable acreage factor using typical residential irrigable area estimates. Allocating the electrical/pumping costs to these 159 ERUs results in a cost of $4.10 per ERU per month.

This more accurate allocation of pumped/pressurized system costs also resulted in a net reduction in the revenue required to support the overall or base secondary water program. Again, this rate methodology review is based only on the current budget year. The total number of ERUs comprising the secondary water customer base for this budget year is 3,120 (2,961 non-pumped connections + 159 pumped connections). The base revenue required from these customers will be $645,688 (see '07 Secondary Water Budget on the following page) resulting in a rate of $17.25 per ERU per month.

South Jordan City
Fiscal Year 06-07 Budget - Secondary Water Fund

Line Item Description	Budget 2007
Sources of Funds	
Revenues:	
Irrigation water sales (@ $18.54/ERU)	649,688
Total Revenues	649,688
Total Sources of Funds	$ 649,688
Uses of Funds	
Enterprise Expenditures:	
Salaries Wages & Benefits - existing compliment	
Full time	57,965
Part time	-
Overtime	3,000
On call pay	250
Administration fee - personnel	84,926
Retirement	12,963
Insurance	17,438
Worker's compensation	1,720
Subtotal salaries wages & benefits	178,262
Materials and Supplies:	
Books, memberships, & subscriptions	-
Office supplies	-
Printing	-
Equipment supplies	5,000
Equipment repairs	4,372
Facility repair and maintenance	-
Training	2,500
Subtotal materials and supplies	11,872
Other Expenditures:	
Cell phones & pagers	1,200
Water pumps electricity	500
Professional & technical services	-
Administrative charges	99,364
Vehicle expenses	6,000
Uniforms	900
Gas & oil	5,000
Small tools	500
Secondary water system maintenance	135,128
Water share assessments	60,000
	308,592
Capital Expenditures:	
Principal on bonds	-
Bond interest payment	-
Capital lease payments	17,688
Interest on capital leases	2,893
Subtotal capital expenditures	20,581
Project Expenditures:	
Beckstead canal maintenance	17,893
Subtotal project expenditures	17,893
Unappropriated Ending Fund Balance	108,488
Total Uses of Funds	$ 645,688

This overall or base secondary program serves all City customers, both pumped and non-pumped. Accordingly, all customers participate in this program cost on the per connection rate identified above. In isolating the pumped system costs, the rate structure is able to allocate these specific pump and electricity costs to those customers who benefit from these direct services. This cost element is then added as a "use" tier to the overall base rate. As stated above, South Jordan City's current secondary water rate is based on a per connection or ERU structure. Given the small size and homogeneity of its customer base, this approach is reasonable.

Base Rate (applied to pumped/non-pumped connections)..... $17.25 per ERU
Use Rate (additional tier applied to only pumped connections)..... $4.10 per ERU

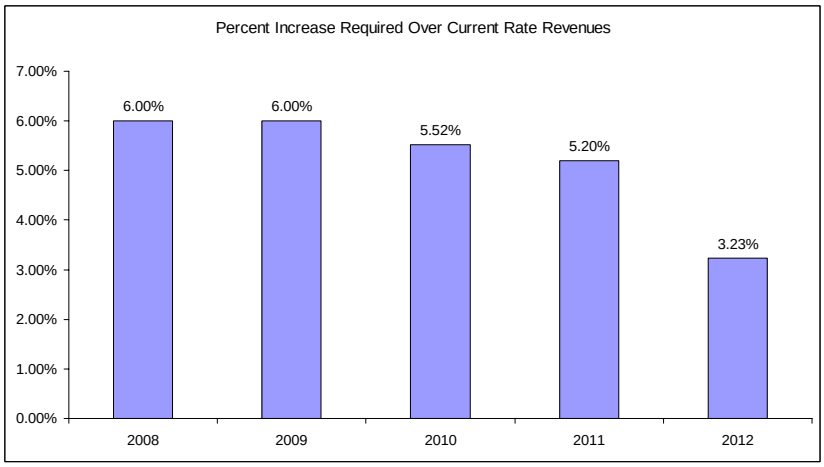
This analysis evaluates current secondary water rate conditions within the context of improving the structure's fairness and consistency. It is also recognized that the City's secondary water system will be extended to new developments within the City in the coming years. As these extensions occur, the same rate methodology identified above can be replicated by the City. That

is, costs that can be specifically allocated to these system extensions such as pumps and related electrical costs should be allocated as a specific rate tier. At the same time, these new extensions should also participate in the base secondary program supporting these extension areas. This is an important step in more fairly allocating system costs. Short of metering secondary water flows for each property, there are limited opportunities to accurately apply the "use fee" identified in the City's Position Paper. At the same time, several Utah cities have allocated pressure irrigation system costs based on the "irrigable area" of each property within the service area. Irrigable area is measured in square footage and represents the lawn/open and landscaped area on a lot which may require secondary water. Since secondary water to a particular property is not metered as in the culinary water system, use may be estimated as a function of the system's capacity to serve the property as measured in square footage of irrigable area. This may be a consideration for the City when/if the secondary system is expanded to include all of South Jordan City's residents and businesses.

Summary of Consultant Recommendations for Culinary Water & Secondary Water

- The consultant team is not recommending any culinary water rate adjustments for this fiscal year (2006-2007).

- The base case forecast of culinary water system revenue requirements indicates that beginning in fiscal 2007-08, the City will need to adjust culinary water rates to properly recover its cost of delivering services to customers. The forecasted annual percentage increases in culinary system revenue requirements are as follows:



- The City currently charges a culinary water impact fee of $2,651 per Equivalent Residential Unit (ERU). The impact fee update study that was conducted as part of this engagement concludes that this fee can be defensibly increased to $3,194 per ERU. It is recommended that the City adopt the newly calculated fee.

- When the City actually decides to go to the bond market to fund construction, the structure of future indenture(s) can be crafted to accommodate an early debt retirement, or "call" feature. By doing this, the City can retain the option for paying off future bonds with surplus cash if it is generated, rather than carrying extraordinary fund balances.

- The Water Capital Projects fund is dedicated for construction activity, and therefore, does not fall under the City's "18%" planning rule for operating funds. We recommend that it is prudent to establish and maintain a contingency reserve to meet unexpected emergency outlays in this fund. We suggest that the City consider establishing such a reserve policy. This reserve should represent a reasonable percentage of the original cost of total fixed assets, but should be no less than the cost to replace or repair a critical element of system equipment. We suggest that an appropriate contingency reserve level would be: 1% of culinary system fixed assets (expressed as book value; i.e., original cost less accumulated depreciation).

- The consultant team is not recommending that the City deviate from its current rate structure for customers. However, as the new capital improvement program unfolds, and better

SCADA data is obtained from meters at the JVWCD delivery points, revisiting of this rate structure is recommended.

- The City's current **secondary** water rate structure applies a uniform monthly rate (throughout the year) of $18.54 per ERU. Based on estimated pump expense for the upcoming year, the total electrical cost and operations/maintenance expense for the secondary water pumps will be $7,816. The customers served by this pressure system include 132 residential connections or ERUs and 3 irrigated privately owned ball fields to which the City has assigned a secondary water value of 27 ERUs. Allocating the pumping costs over these 159 ERUs results in a cost of $4.10 per ERU per month to be applied to these pumped system customers in addition to the overall rate of $17.25 resulting in a total rate of $21.35. Corresponding adjustments to the secondary water system's remaining overall budget results in a revenue requirement of $645,688. Given this cost and a total customer base of 3,120 ERUs, the overall secondary water base rate would be $17.25 (current rate is $18.54).

Analysis Section

Summary of Planning Assumptions

Prior to developing any forecast of culinary system revenue requirements, the project team developed a number of planning assumptions for the modeling. As discussed in the executive summary, a twenty year financial planning model was developed for this engagement. However for the near-term rate analysis, the years 2007 through 2012 were the focus of study. The key planning categories that were developed by the team were:

- Interest earnings rates – Based on input from city financial staff, it was determined that a model-wide factor of 3.5% would be appropriate. This figure is based on the current return that the City is recognizing on fund balances (via short term investment vehicles).

- Cost inflation factors – Early on in this engagement, city staff requested that the financial models have the capacity to forecast future costs on a budgetary line item basis. This request was met, and the data in table 5 show the differential inflation factors for each line item in the City's current budget structure. City staff provided the consultant team with the inflation factors that were used for all case studies, and the factors that were of most interest to staff were as follows:
    - All direct labor line items – 4.0% per year
    - Health insurance premiums (City cost) – 12.5% per year
    - Water purchases from JVWCD – 6.0% per year
    - All other operating expense line items – 3.0% per year

- Future staffing additions and costs – The initial revenue requirements forecasts did not have any future staffing additions. At the request of city staff, the models were revised to account for planned staffing additions based upon the Water Department's approved staffing plan. The position counts (expressed in Full Time Equivalents) and the payroll and benefits costs contained in that plan have been included in table 5 below.

- Customer base growth and impact fee forecast - The customer base growth forecast expressed in Equivalent Residential Units (ERUs) is taken from the July 2006 Capital Improvements Plan (CIP). Based on this ERU forecast, the consultant team has applied an impact fee of $3,194 per ERU starting in fiscal 2008. This unit impact fee is indexed for inflation over the forecast horizon. It should be noted that impact fee revenues play a critical roll in the CIP funding plan. Figure 3 show the twenty year forecast of impact fee receipts.

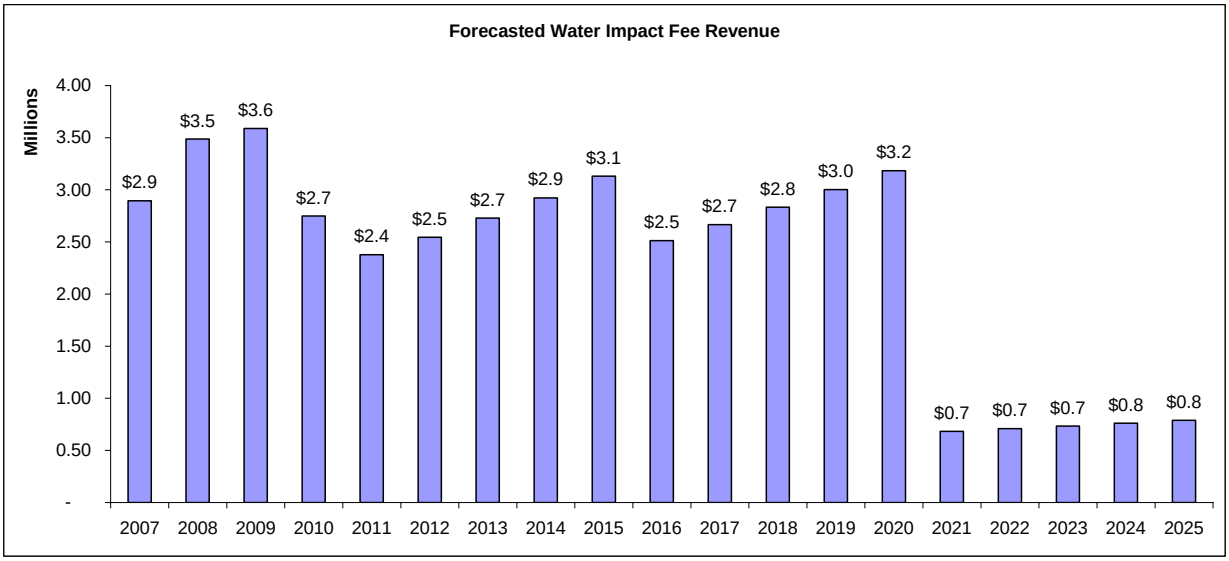
Table 5 - Summary of Planning/Forecast Assumptions

South Jordan City
Summary of Planning Assumptions

	2007	2008	2009	2010	2011	2012
Interest Earnings Rate	3.50%	3.50%	3.50%	3.50%	3.50%	3.50%
Inflation Forecast - Transfers and IGAs	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
Inflation Forecast - Operations						
Enterprise Expenditures:						
Salaries Wages & Benefits						
Full time	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%
Part time	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%
Overtime	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%
On call pay	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%
Retirement	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
Insurance	12.50%	12.50%	12.50%	12.50%	12.50%	12.50%
Worker's compensation	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
Subtotal salaries wages & benefits						
Operations						
Books, memberships, & subscriptions	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
Office supplies	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
Printing	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
Equipment supplies	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
Equipment repairs	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
Facilty repair and maintenance	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
Training	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
Electricity for water station pumps	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
Water purchases from JVWCD	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%
Professional and technical srvices	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
Administrative charges	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
Uniforms	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
Gas	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
Vehicle charges	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
Small tools	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
Fire hydrant repair & replacement	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
Culinary water system maintenance	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
Safe drinking act compliance	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
Telemetry service contract	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
Blue stakes	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
Ratio tower lease	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
Subtotal operating expenses						
Water Division Staffing Plan Additions:						
Full time equivalents positions and hourly rates (2006)	Hourly Rate					
Maintenance worker	$ 14.21	1.00		2.00		1.00
Backflow tech II	$ 14.21		1.00			
Lead worker	$ 18.90				1.00	
Salaries Wages & Benefits						
Full time		30,739	31,969	66,495	45,989	35,960
Part time						
Overtime		1,119	1,164	2,420	1,674	1,309
On call pay		151	157	326	225	176
Retirement		5,957	6,136	12,640	8,658	6,705
Insurance		8,305	9,343	21,021	15,727	13,302
Worker's compensation		699	720	1,484	1,017	787
Subtotal salaries wages & benefits		46,970	49,488	104,386	73,290	58,240
Estimated Equivalent Residential Units	14,033	15,125	16,216	17,027	17,708	18,416
Annual Growth in Equivalent Residential Units[1]	1,092	1,092	1,091	811	681	708
Impact Fee per ERU	2,651	3,194	3,290	3,389	3,490	3,595
Forecasted Water Impact Fee Revenue	2,894,892	3,488,033	3,589,384	2,748,231	2,376,932	2,545,307

[1] Source: Culinary Water System Capital Improvement Plan; Draft report; July, 2006; Hansen, Allen & Luce

Figure 4 - Twenty Year Forecast of Impact Fee Receipts



Cumulative Forecasted Impact Fee Receipts (2006 - 2025): $ 47,007,161

Capital Improvement Plan and Funding Strategy

The City is in the process of updating its master plan for the culinary system. The starting point for the funding strategy for that plan comes from the City's July 2006 CIP. An on-going concern regarding the funding for this CIP has been identifying the capital costs already incurred by the City, and funded from the proceeds of the City's 2003 water system revenue bond. Based on input received from the City that identified current vs. future funding for the projects in the CIP, the future amount to be funded by the City has been reduced by $13.4 million to account for projects that have been fully or partially paid through the 2003 revenue bond proceeds. Also based on city staff input, we have added certain costs to the July, 2006 CIP that were not previously included. Firstly, we have added $2.0 million to account for the water department's estimated pro rata share of the new municipal services building and yard improvements. These facilities are projected to be constructed in fiscal 2008. Secondly, we have added $408,000 to the CIP for Supervisory Control and Data Acquisition (SCADA) projects related to the CIP's called out in the culinary water master plan. These costs are spread out over four projects and over several forecast years. Finally, we have added $388,869 to pay for whole street overlays that will be charged to the Water Department as a result of street cuts made for three water pipeline projects. With these additions, the net future CIP funding requirement amounts to $35.4 million (in 2006 dollars). Table 6 lays out the modified CIP by project.

Table 6 - Culinary Water Capital Improvement Plan

South Jordan City
Summary of Culinary Water System Capital Improvement Plan

Cost Escalation Rate	3.00%

Project ID	Cost in FY 2006	Costs Already Funded	Net Costs 2006	Construction Fiscal Year	Project
					Existing System Deficiency Projects
1	2,679,600	1,423,300	1,256,300	2009	Install 9,200 feet of 30" pipe from tank 2 - pressure zone 2
2	807,800		807,800	2008	Install 3,700 feet of 20" pipe - pressure zone 2
3	291,200		291,200	2008	Install 1,600 feet of 16" pipe - pressure zone 2
4	966,000		966,000	2008	Install 7,500 feet of 12" pipe - pressure zone 2
4a	156,165		156,165	2008	3200 W. 10000 So. To Cameron Court street overlay costs
5	6,639,600		6,639,600	2009	Construct 7.5 mg storage for pressure zone 2
5a	24,000		24,000	2009	SCADA for tank 2
5b	339,605		339,605	2009	Permanent and temporary easement costs for pressure zone 2 tankage and pipeline
6	411,600		411,600	2008	Install 2,130 feet of 14" pipe and PRV - pressure zone 2
7	277,200	297,000	0	2008	Install 970 feet of 8" pipe along 10000 S, and 1,450 feet of 10" pipe along 300W
8	137,200	137,200	0	2007	New JVWCD connection including PRV and FCV combination
9	2,823,400	4,457,714	0	2007	Construct 5.0 mg of storage or pressure zones 4 and 5 (tank 5A)
10	2,823,400	2,862,240	0	2007	Construct 5.0 mg of storage for pressure zones 4 and 5 (tank 5B)
11	189,000		189,000	2007	New JVWCD connection tank 5A including PRV and FCV combination
12	91,900		91,900	2007	New JVWCD connection tank 5B including PRV and FCV combination
13	0		0	2007	Install 200 feet of 20" from new JVWCD connection tank 5A to tank 5B
14	307,800		307,800	2007	Install 2,100 feet of 20" pipe from new JVWCD connection tank 5A to tank 5A
15	877,900		877,900	2007	Install 4,500 feet of 30" pipe from tank 5A to approximately 5700 W and 10200 S
16	161,200		161,200	2007	Install 1,200 feet of 18" pipe in 10200 S, parallel to the existing 24" line
17	1,619,000	2,758,627	0	2007	Install 8,300 feet of 30" pipe in 11800 S from tank 5B to approximately 5500 W
18	1,092,000		1,092,000	2007	Install 6,400 feet of 24" pipe in 11800 S, parallel to the existing 16" line
19	873,600		873,600	2007	Install 4,000 feet of 20" pipe in 11800 S, parallel to the existing 10" line
20	1,302,000		1,302,000	2007	Install 6,500 feet of 16: pipe in 4000 W to serve the Kunkler property development
21	22,500		22,500	2007	Install three 16" connections between the proposed 24" and existing 16" lines
22	432,600		432,600	2007	Replace 12" pipe along 4800 W and 2,160 feet of 16" pipe at 10200 S
23	53,200		53,200	2007	Install PRV 102nd 43 8" and PRV 102nd 43 12"
24	296,800		296,800	2007	Replace 2,300 feet of 6" pipe with 12" pipe along 1000 W
			0		**Fire Flow Deficiency Projects**
25	21,000		21,000	2008	Install 200 feet of 8" pipe on 1055 W connecting the 6" line at 11000 S
26	215,600		215,600	2008	Replace 2,000 feet of 6" pipe with 8" pipe in 9640 S
27	86,800		86,800	2008	Replace 800 feet of 6" pipe with 8" pipe in Congressional Way
28	151,200		151,200	2008	Replace 1,400 feet of 6" pipe with 8" pipe in 2950 W
29	156,800		156,800	2008	Replace 1,460 feet of 4" pipe with 8" pipe in 2865 W
30	147,000		147,000	2008	Replace 1,370 feet of 6" pipe with 8" pipe in 2950 W
31	270,200		270,200	2008	Replace 2,500 feet of 6" pipe with 8" pipe in 10950 S
31a	65,000		65,000	2008	Welby Elementary Fire Flow Deficiency Correction
			0		**Build-Out Recommended Projects**
32	168,000		168,000	2010	Retrofit PRVs at JVWCD connections in pressure zones 1, 2, & 3 w/ combo PRV/FCV
32a	192,000		192,000	2008	SCADA for JVWCD delivery points
33	672,000		672,000	2010	Install 4,100 feet of 14" pipe along 10200 S
33a	23,940		23,940	2010	10200 S McKinley park to Chattel Circle street overlay costs
34	4,074,000		4,074,000	2010	Construct 4.0 mg tank 1B at 2900 W - pressure zone 1
34a	24,000		24,000	2010	SCADA for tank 1b
35	2,394,000	1,466,776	927,224	2010	Construct 2.0 mg tank 3B at 4450 W - pressure zone 3
36	3,116,400		3,116,400	2007	Install 10,700 feet of 30" pipe from tank 1B south to 10400 S
37	1,351,000		1,351,000	2007	Install 5,300 feet of 24" pipe at 2200 W
38	280,000		280,000	2007	Install 1,100 feet of 24" pipe from tank 3B to the northeast
39	1,456,000		1,456,000	2007	Replace 8,000 feet of 10" pipe with 16" pipe along 3600 W
40	103,600		103,600	2012	replace 800 feet of 6" pipe with 12" pipe along 3200 W
41	28,000		28,000	2007	Connect proposed 16" pipe to existing 12" pipe just east of PRV 102nd 36
42	1,442,000		1,442,000	2010	Replace 4,100 feet of 12" pipe with 20" pipe along 4000 W; install 2,500 feet of 20" pipe along 4000 W
42a	208,764		208,764	2010	Street overlay costs for project no. 42
A	336,000		336,000	2010	Construct 0.4 MG of storage for pressure zone 6
B	1,092,600		1,092,600	2010	Install 20" diameter pipe that will supply tank 5B
C	2,000,000		2,000,000	2008	Water's share of the municipal services building
D	168,000		168,000	2010	SCADA for PRVs
	$45,940,175	$13,402,857	$35,369,899		

In all forecast years, every attempt is made to use surplus cash to fund capital improvements. However, since the CIP is so heavily front end loaded, it was necessary to model the use of new revenue bond proceeds to fill the funding gap. Assuming that the CIP is funded based on the implementation schedule laid out in the July, 2006 Plan, by the end of fiscal 2010, the Culinary Water Fund will be generating surpluses. When the City actually decides to go to the bond market, the structure of future indentures can be crafted to accommodate an early debt

retirement, or "call" feature. By doing this, the City can retain the option for paying off future bonds with surplus cash if it is generated, rather than carrying extraordinary fund balances.

The ultimate funding plan for the master plan CIP will depend on the timing of projects and the cash position of the utility. For modeling purposes, the project team has assumed that the City will "buy down" the ultimate borrowing requirements with the use of free cash flow (i.e., unappropriated fund balances), and with water impact fee receipts. Table 7 contains the modeling results after employing these decision rules.

Table 7 - CIP Funding Strategy

South Jordan City
Summary of Culinary Water CIP Funding Strategies

Assumptions:	
Fund Earnings %	3.50%
Issuance Cost:	
Short-Term	0.00%
Long-Term:	
Revenue Bonds	1.50%
G.O. Bonds	0.00%

Interim Financing:	
BANs Used? (1=Y,0=N)	0
BAN Interest Rate:	4.55%
Long-Term Financing:	
Revenue Bonds:	
Life of Debt (Years)	20
Interest Rate	4.55%
Coverage Factor Required	1.25
Fund Reserve from Proceeds? (1=Y,0=N)	1
Administration Fee (on Outstanding Bal)	0.0%
General Obligation Bonds:	
Life of Debt (Years)	20
Interest Rate	4.55%
Fund Reserve from Proceeds? (1=Y,0=N)	1

Fiscal Year	2006	2007	2008	2009	2010	2011	2012
Type of Long Term Debt Issued (1=Y,0=N):							
Revenue Bonds	1	1	1	1	1	1	1
General Obligation Bonds	0	0	0	0	0	0	0
Capital Improvements Financing	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**
Capital Costs to be Funded	-	12,289,857	6,300,011	9,025,385	10,283,243	-	123,704
less: Use of Water Capital Projects Fund Balance	-	1,025,000	1,750,000	1,200,000	1,050,000	-	123,704
less: Impact Fee Contributions		6,757,000	3,488,500	3,589,000	2,748,000	-	-
less: Contributions From Utility Rates							
Amount to be Financed	-	4,507,857	1,061,511	4,236,385	6,485,243	-	-
Interim Borrowing:							
BANs Issued:	-	-	-	-	-	-	-
less: Borrowing Cost	-	-	-	-	-	-	-
less: Interest Payments	-	-	-	-	-	-	-
plus: Interest Earnings	-	-	-	-	-	-	-
Net Available from BANS	-	-	-	-	-	-	-
Long-term Borrowing:							
Revenue Bonds:							
Amount Borrowed	-	4,965,746	1,169,335	4,666,699	7,143,987	-	-
less: Financing Cost	-	74,486	17,540	70,000	107,160	-	-
less: Reserve Funding	-	383,403	90,284	360,314	551,584	-	-
less: Refunding of BANs	-	-	-	-	-	-	-
Net Funds from Revenue Bonds	-	4,507,857	1,061,511	4,236,385	6,485,243	-	-
General Obligation Bonds:							
Amount Borrowed	-	-	-	-	-	-	-
less: Financing Cost	-	-	-	-	-	-	-
less: Reserve Funding	-	-	-	-	-	-	-
less: Refunding of BANs	-	-	-	-	-	-	-
Net Funds from G.O. Bonds	-	-	-	-	-	-	-
New Annual Debt Service:							
Principal & Interest Repayment	-	383,403	473,687	834,001	1,385,585	1,385,585	1,385,585
Administration Fee	-	-	-	-	-	-	-
Total Annual Debt Service	-	383,403	473,687	834,001	1,385,585	1,385,585	1,385,585

As the data in table 7 shows, even with significant funding support from free cash flow and impact fees, the City is facing new borrowings. As discussed above, the ultimate timing of these

future borrowings will be contingent on the actual timing of project(s) construction. It should also be pointed out that effectively all of the CIP is currently planned to be implemented by the end of fiscal 2010 (i.e., within three years). If this implementation schedule is not achieved, the borrowing schedule will also change.

Forecast of Revenue Requirements

After all of the items discussed above were loaded into the revenue requirements model, the consultant team proceeded to develop a number of forecasts. The first forecast was called the base case, and it simply modeled the data as presented. This case assumed that the utility would fund the CIP as currently phased in the July, 2006 plan in addition to the newly added construction projects discussed above (i.e., the Water Department's share of the new municipal services building, and the SCADA projects). Also, the utility would fund the operating costs in excess of inflation (i.e., added administrative and staffing costs). Table 8 show the results of this forecast.

Table 8 - Forecast of Culinary System Revenue Requirements

South Jordan City
Projection of Water Fund Revenue Requirements

Line Item Description	Actual 2004	Actual 2005	Estimated 2006	Estimated 2007	Near Term Forecast 2008	2009	2010	2011	2012
Projection of Cash Flow:									
Water fees	6,230,780	6,606,578	7,282,673	8,029,147	8,706,670	9,906,902	11,216,369	12,396,559	13,537,021
Finance charges	134,742	124,234	129,000	129,325	133,205	137,201	141,317	145,557	149,924
Investment earnings	-	19,930	87,520	70,000	47,776	39,066	44,556	63,462	94,178
Water share leases	-	6,331	3,217	4,774	4,917	5,065	5,217	5,373	5,534
Water meter sets	-	117,227	206,750	161,989	174,593	187,186	196,546	204,406	212,578
Backflow fees	-	-	-	20,000	21,555	23,109	24,264	25,233	26,241
Miscellaneous revenues	113,170	22,457	34,229	56,619	61,024	65,424	68,695	71,442	74,297
Sale of capital assets	-	6,440	-	-	-	-	-	-	-
Transfer from Water Capital Projects Fund	-	450,000	302,650	296,864	-	-	-	-	-
Subtotal Gross Revenues	6,478,692	7,353,197	8,046,039	8,768,718	9,149,741	10,363,954	11,696,965	12,912,032	14,099,773
less: Operations & maintenance expense	4,283,997	4,762,788	5,157,425	5,433,437	6,510,974	7,341,479	8,002,931	9,251,945	10,249,370
less: Debt service	1,064,473	2,061,506	2,057,569	2,450,934	2,535,578	2,900,458	3,456,855	3,449,851	3,434,110
less: Transfers to other funds	556,426	82,346	474,551	622,346	481,200	482,436	483,709	485,020	486,371
less: Trustee fees	-	3,927	9,500	9,500	9,500	9,500	9,500	9,500	9,500
Net Cash	573,796	442,630	346,994	252,500	(387,511)	(369,919)	(256,030)	(284,285)	(79,578)
Net Deficiency/(Surplus)	(573,796)	(442,630)	(346,994)	(252,500)	387,511	369,919	256,030	284,285	79,578
Test of Coverage Requirement:									
Total Operations & Maintenance Expense	4,283,997	4,762,788	5,157,425	5,433,437	6,510,974	7,341,479	8,002,931	9,251,945	10,249,370
Debt service on senior lien revenue bonds	1,064,473	2,061,506	2,057,569	2,450,934	2,535,578	2,900,458	3,456,855	3,449,851	3,434,110
Additional Coverage Required: 25%	266,118	515,377	514,392	612,734	633,895	725,115	864,214	862,463	858,528
Total Revenue Required with Coverage	5,614,588	7,339,671	7,729,386	8,497,105	9,680,447	10,967,052	12,323,999	13,564,259	14,542,008
Gross Revenues Allowable for Coverage Test:	6,478,692	7,353,197	8,046,039	8,768,718	9,149,741	10,363,954	11,696,965	12,912,032	14,099,773
Coverage Recognized	2.06	1.26	1.40	1.36	1.04	1.04	1.07	1.06	1.12
Coverage Required	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25
Net Deficiency/(Surplus)	(864,104)	(13,526)	(316,653)	(271,612)	530,706	603,098	627,035	652,227	442,235
Projection of Revenue Sufficiency:									
Maximum Deficiency			-	-	530,706	603,098	627,035	652,227	442,235
Percent Increase Required Over Current Rate Revenues			0.00%	0.00%	6.00%	6.00%	5.52%	5.20%	3.23%
Culinary water rates reconciliation:									
Revenues recognized from current rates			7,282,673	8,029,147	8,706,670	9,906,902	11,216,369	12,396,559	13,537,021
Add revenues from rate increase			-	-	522,709	594,860	619,233	644,658	437,390
Add revenues from growth in customer base			625,120	677,523	677,523	714,607	560,957	495,804	541,236
Total revenues recognized from rate increase and growth			7,907,793	8,706,670	9,906,902	11,216,369	12,396,559	13,537,021	14,515,648

Based on the revenue requirements forecast shown in table 8, without the benefit of other resources, the City will be facing culinary system rate increases in each of the five (5) forecast

years. It is assumed that these additional revenues will come entirely from rates and flow through to the culinary water fund. Table 9 shows the forecasted results for the culinary water fund.

Table 9 - Forecasted Results for the Culinary Water Fund

South Jordan City
Statement of Cash Flow and Changes in Fund Balance - Culinary Water Fund
Rate Smooting Case

	Actual		Estimated		Forecast				
Line Item Description	2004	2005	2006	2007	2008	2009	2010	2011	2012
Sources of Funds									
Beginning Fund Balance:	48,075	621,871	1,064,501	1,406,182	1,658,681	1,071,402	1,160,950	1,385,109	2,241,286
Revenues:									
Water fees	6,230,780	6,606,578	7,282,673	8,029,147	9,906,902	11,216,369	12,396,559	13,537,021	14,515,648
Finance charges	134,742	124,234	129,000	129,325	133,205	137,201	141,317	145,557	149,924
Investment earnings	-	19,930	87,520	70,000	47,776	39,066	44,556	63,462	94,178
Water share leases	-	6,331	3,217	4,774	4,917	5,065	5,217	5,373	5,534
Water meter sets	-	117,227	206,750	161,989	174,593	187,186	196,546	204,406	212,578
Backflow fees	-	-	-	20,000	21,555	23,109	24,264	25,233	26,241
Miscellaneous revenues	113,170	22,457	34,229	56,619	61,024	65,424	68,695	71,442	74,297
Sale of capital assets	-	6,440	-	-	-	-	-	-	-
Transfer from Water Impact Fee Fund	-	-	-	-	-	-	-	-	-
Transfer from Secondary Water Fund	-	-	4,678						
Transfer from Water Capital Projects Fund	-	450,000	302,650	296,864	-	-	-	-	-
Total Revenues	6,478,692	7,353,197	8,050,717	8,768,718	10,349,973	11,673,420	12,877,154	14,052,494	15,078,400
Total Sources of Funds	$ 6,526,767	$ 7,975,068	$ 9,115,218	$ 10,174,899	$ 12,008,654	$ 12,744,823	$ 14,038,104	$ 15,437,603	$ 17,319,686
Uses of Funds									
Enterprise Expenditures:									
Salaries Wages & Benefits - existing compliment									
Full time	382,892	435,182	588,705	612,254	667,483	726,151	821,692	900,549	972,531
Part time	-	-	-	-	-	-	-	-	-
Overtime	13,937	15,840	21,428	22,286	24,296	26,431	29,909	32,779	35,399
On call pay	1,875	2,131	2,883	2,998	3,269	3,556	4,024	4,410	4,762
Retirement	75,650	85,981	116,314	119,803	129,354	139,371	156,191	169,535	181,326
Insurance	88,403	100,476	135,922	152,912	180,331	212,215	259,762	307,960	359,757
Worker's compensation	8,883	10,096	13,658	14,068	15,189	16,365	18,340	19,907	21,292
Subtotal salaries wages & benefits	571,640	649,706	878,910	924,320	1,019,921	1,124,089	1,289,919	1,435,140	1,575,068
Operations						104,167			
Books, memberships, & subscriptions	386	428	445	458	472	486	501	516	531
Office supplies	526	583	606	624	643	662	682	703	724
Printing	2,905	3,219	3,348	3,448	3,552	3,658	3,768	3,881	3,998
Equipment supplies	112,761	124,933	129,958	133,857	137,872	142,008	146,269	150,657	155,176
Equipment repairs	13,441	14,892	15,491	15,956	16,434	16,927	17,435	17,958	18,497
Facilty repair and maintenance	183	203	211	217	224	230	237	245	252
Training	6,104	6,763	7,035	7,246	7,463	7,687	7,918	8,155	8,400
Electricity for water station pumps	14,285	15,827	16,464	16,957	17,466	17,990	18,530	19,086	19,658
Water purchases from JVWCD	2,957,232	3,276,446	3,408,229	3,612,722	4,428,366	4,983,423	5,302,626	6,364,107	7,178,024
Professional and technical srvices	345	382	398	410	422	434	448	461	475
Administrative charges	471,850	522,783	543,810	560,124	716,328	877,218	1,042,935	1,074,223	1,106,449
Uniforms	1,963	2,175	2,262	2,330	2,400	2,472	2,546	2,623	2,701
Gas	23,989	26,578	27,647	28,477	29,331	30,211	31,117	32,051	33,013
Vehicle charges	-	-	-	-	-	-	-	-	-
Small tools	1,485	1,645	1,711	1,763	1,816	1,870	1,926	1,984	2,044
Fire hydrant repair & replacement	40,977	45,400	47,226	48,643	50,102	51,605	53,154	54,748	56,391
Culinary water system maintenance	48,698	53,955	56,125	57,808	59,543	61,329	63,169	65,064	67,016
Safe drinking act compliance	-	-	-	-	-	-	-	-	-
Telemetry service contract	-	-	-	-	-	-	-	-	-
Blue stakes	8,747	9,691	10,081	10,383	10,695	11,016	11,346	11,687	12,037
Ratio tower lease	6,480	7,179	7,468	7,692	7,923	8,161	8,406	8,658	8,917
Subtotal operating expenses	3,712,357	4,113,082	4,278,515	4,509,117	5,491,053	6,217,390	6,713,012	7,816,805	8,674,303
Other Expenses									
Trustee fee	-	3,927	9,500	9,500	9,500	9,500	9,500	9,500	9,500
Transfer to debt service fund	82,346	82,346	89,879	82,346	90,000	90,000	90,000	90,000	90,000
2000 bond payment - principal	110,000	120,000	125,000	130,000	140,000	145,000	150,000	160,000	165,000
2003 bond payment - principal	789,136	730,000	750,000	785,000	800,000	835,000	875,000	900,000	925,000
2000 bond payment - interest	165,337	159,013	152,275	145,263	138,398	131,664	124,583	116,985	108,900
2003 bond payment - interest	-	1,052,494	1,030,294	1,007,269	983,494	954,794	921,688	887,281	849,625
Debt service on future bonds	-	-	-	383,403	473,687	834,001	1,385,585	1,385,585	1,385,585
Transfer to water capital projects fund - rate funded	472,380	-	344,622	500,000	350,000	350,000	350,000	350,000	350,000
Transfer to water capital projects fund - use of fund balance	-	-	-	-	1,400,000	850,000	700,000		
Transfer to the general fund	-	-	9,991						
Transfer to capital equipment fund	1,700	-	40,050	40,000	41,200	42,436	43,709	45,020	46,371
Subtotal other expenses	1,620,899	2,147,779	2,551,611	3,082,780	4,426,278	4,242,394	4,650,064	3,944,372	3,929,981
Unappropriated Ending Fund Balance	621,871	1,064,501	1,406,182	1,658,681	1,071,402	1,160,950	1,385,109	2,241,286	3,140,335
Total Uses of Funds	$ 6,526,767	$ 7,975,068	$ 9,115,218	$ 10,174,899	$ 12,008,654	$ 12,744,823	$ 14,038,104	$ 15,437,603	$ 17,319,686

Schedule of Forecasted Rates

The City currently has an inverted block rate structure that is designed to give customers a price incentive to conserve water. Under the City's current system of culinary water rates, separate schedules have been developed for the residential and non-residential customer classes. For all residential customer served by the culinary system, the City charges a uniform monthly base fee per customer of $29.42 regardless of geographic location within the City's service area. However, the monthly usage fee (expressed in dollars per 1,000 gallons) varies by service delivery area (i.e., A, B, or C). Within each service delivery area, water is priced in four discrete consumption blocks, with the unit price increasing as the consumption block increases. Generally, inverted block rate structures are the most widely accepted and effective water conservation rate structures. Inverted block rates increase as consumption increases. The advantages are that they can be highly conservation oriented and are generally understandable by customers. With proper educational programs conducted prior to rate changes, they are generally accepted by customers. There are challenges in developing appropriate blocks, cutoffs, and unit rates, and, they may result in revenue instability. This is particularly important given the fact that the City is embarking on a significant capital improvement program.

The consultant team studied the City's metered water consumption history for the three calendar years 2002-2004. For the residential class, the preponderance of customers had annual average consumption in the first two lower consumption blocks (i.e., zero to 10,000 gallons, and 10,001 to 28,000 gallons. The average monthly consumption for this class was consistently at or very near the 20,000 gallons per month value. Water consumption in the residential class is very homogeneous with the preponderance of monthly consumption tightly grouped around the 11-20 thousand gallon per month block. Another interesting observation that can be drawn from the data is that roughly 95% of all residential consumption is accounted for between the zero and 40 thousand gallon per month range. The consultant team is not recommending that the City deviate from its current rate structure for residential customers. However, as the new capital improvement program unfolds, and better SCADA data is obtained from meters at the JVWCD delivery points, revisiting of this rate structure is recommended

Non-residential water rates are also based on an inverted block structure. For these non-residential customers, the City charges a uniform monthly base fee per customer of $62.39 regardless of geographic location within the City's service area. However, water is priced in five discrete consumption blocks (versus four for the residential class); with the unit price increasing more steeply as the consumption block increases. This is a change from the residential inverted block structure. The theory here is that with more pricing blocks, the price sensitive commercial and industrial customers are given a stronger price signal to conserve.

The non-residential customer class consists of businesses, industries, and institutions that purchase water from the City. The consumption patterns of this class are expected to vary significantly from the monolithic pattern that was observed for the residential class. For example, a large commercial nursery located in the City that purchases culinary water for irrigation, would clearly use more water, more often, than the standard single family residential customer. This class of customers with the account code prefix "10" was also analyzed by the team from the City download data. In the case of non-residential water consumption, the frequency distribution can be characterized as bi-

modal, in that the observed data consistently generates two distinct peaks in the frequency distribution. As the data show, this class actually consists of two types of consumers. The first group can be characterized as low consumption customers. This group congregated around the low end of the consumption block scale. Examples of these types of customers could be professional offices, small retail shops, and small businesses without the need for irrigation.

The second type of customer in this class is the larger consumption group. This group consumed water at the higher end of the scale, with the preponderance of them grouped at the 101-200 k-gallon per month block. These types of customers usually have both domestic and irrigation uses for the culinary water that is delivered to them. Examples of this group could be big box retailers, strip mall owners, large restaurants, and associated customers with large land use foot prints. The bi-modal consumption pattern of the commercial class could argue that targeted pricing blocks would be appropriate. The reason being that the cost to deliver water to the high consumption customers (particularly for peaking), would justify higher pricing for the outer consumption blocks. Here too, the consultant team is not recommending that the City deviate from its current rate structure for non-residential customers. However, as the new capital improvement program unfolds, and better SCADA data is obtained from meters at the JVWCD delivery points, revisiting of this rate structure is recommended

Table 10 shows existing and forecasted culinary water rates based on the City's currently adopted rate schedule, and with the application of general rate increases in fiscal 2009 and 2010 per the forecasted increases in system revenue requirements.

Table 10 - Forecasted Schedule of Culinary Water Rates

South Jordan City
Forecasted Schedule of Culinary Water User Rates

	Actual		Forecast				
	2006	2007	2008	2009	2010	2011	2012
General Rate Increase Percentage			6.00%	6.00%	5.52%	5.20%	3.23%
Residential							
Area A							
Monthly Base Rate	28.02	29.42	31.19	33.06	34.88	36.70	37.88
Monthly Usage Rate							
Up to 10,000 gallons (per 1,000 gallons)	1.20	1.31	1.39	1.47	1.55	1.63	1.69
10,001 to 28,000 gallons (per 1,000 gallons)	1.36	1.49	1.58	1.67	1.77	1.86	1.92
28,001 to 48,000 gallons (per 1,000 gallons)	1.51	1.65	1.75	1.85	1.96	2.06	2.12
48,001 gallons and up (per 1,000 gallons)	1.66	1.81	1.92	2.03	2.15	2.26	2.33
Area B							
Monthly Base Rate	28.02	29.42	31.19	33.06	34.88	36.70	37.88
Monthly Usage Rate							
Up to 10,000 gallons (per 1,000 gallons)	1.26	1.38	1.46	1.55	1.64	1.72	1.78
10,001 to 28,000 gallons (per 1,000 gallons)	1.42	1.55	1.64	1.74	1.84	1.93	2.00
28,001 to 48,000 gallons (per 1,000 gallons)	1.58	1.73	1.83	1.94	2.05	2.16	2.23
48,001 gallons and up (per 1,000 gallons)	1.74	1.90	2.01	2.14	2.25	2.37	2.45
Area C							
Monthly Base Rate	28.02	29.42	31.19	33.06	34.88	36.70	37.88
Monthly Usage Rate							
Up to 10,000 gallons (per 1,000 gallons)	1.32	1.44	1.53	1.62	1.71	1.80	1.85
10,001 to 28,000 gallons (per 1,000 gallons)	1.49	1.63	1.73	1.83	1.93	2.03	2.10
28,001 to 48,000 gallons (per 1,000 gallons)	1.65	1.80	1.91	2.02	2.13	2.25	2.32
48,001 gallons and up (per 1,000 gallons)	1.82	1.99	2.11	2.24	2.36	2.48	2.56
Commercial							
Area A							
Monthly Base Rate (per month with 8,000 gallons)	59.42	62.39	66.14	70.11	73.98	77.82	80.34
Monthly Overage Rate							
over 8,000 gallons	1.42	1.55	1.64	1.74	1.84	1.93	2.00
over 25,000 gallons	1.54	1.68	1.78	1.89	1.99	2.10	2.16
over 50,000 gallons	1.68	1.83	1.94	2.06	2.17	2.28	2.36
over 75,000 gallons	1.85	2.02	2.14	2.27	2.40	2.52	2.60
over 100,000 gallons	2.05	2.24	2.37	2.52	2.66	2.79	2.88
Area B							
Monthly Base Rate (per month with 8,000 gallons)	59.42	62.39	66.14	70.11	73.98	77.82	80.34
Monthly Overage Rate							
over 8,000 gallons	1.49	1.63	1.73	1.83	1.93	2.03	2.10
over 25,000 gallons	1.62	1.77	1.88	1.99	2.10	2.21	2.28
over 50,000 gallons	1.76	1.92	2.04	2.16	2.28	2.39	2.47
over 75,000 gallons	1.94	2.12	2.25	2.38	2.51	2.64	2.73
over 100,000 gallons	2.15	2.35	2.49	2.64	2.79	2.93	3.03
Area C							
Monthly Base Rate (per month with 8,000 gallons)	59.42	62.39	66.14	70.11	73.98	77.82	80.34
Monthly Overage Rate							
over 8,000 gallons	1.55	1.69	1.79	1.90	2.00	2.11	2.18
over 25,000 gallons	1.69	1.85	1.96	2.08	2.19	2.31	2.38
over 50,000 gallons	1.84	2.01	2.13	2.26	2.38	2.51	2.59
over 75,000 gallons	2.02	2.21	2.34	2.48	2.62	2.76	2.85
over 100,000 gallons	2.24	2.45	2.60	2.75	2.91	3.06	3.15


SOUTH JORDAN
U T A H